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PEARLESCENT SURFACTANT COMPOSITION

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(57) Claim

1. A surfactant composition which ~~comprises~~ includes

(A) a glycoside;

(B) an isethionate surfactant; and

(C) water;

the proportions of (A), (B) and (C) being such as to render the composition pearlescent.

2. A composition as claimed in claim 1 wherein the glycoside is a compound of the general formula (I):-

$$R(OG)_a \qquad (I)$$

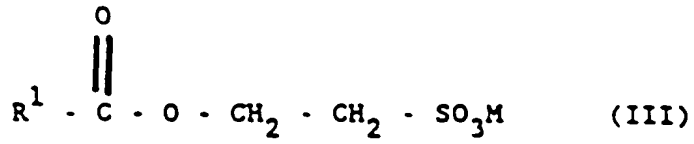
where

R is a hydrocarbyl group, a substituted hydrocarbyl group, a hydrocarbonoxy group or a substituted hydrocarbonoxy group.

G is a saccharide group; and

a has a value of at least one.

6. A composition as claimed in any one of claims 1 to 4 wherein the isethi nate surfactant is of the general formula:



$$R^1 - C(=O) - O - CH_2 - CH_2 - SO_3M \qquad (III)$$

where

R^1 is a C_{12}-C_{22} hydrocarbon group, which may be substituted; and

M is a cation having a valency and being in an amount sufficient to give a neutral composition.

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(54) Title: PEARLESCENT SURFACTANT COMPOSITION

(57) Abstract

A mixture of a glycoside derivative together with an isethionate in the presence of water gives a composition which is effective as a pearlescent agent. The mixture may be concentrated and contain as little as 35 % by weight of water. The relative proportions by weight of glycoside to isethionate to achieve a pearlescent effect are from 0.4:1 up to 1.5:1, preferably about 0.6:1 by weight. The glycoside is preferably an alkyl polyglucoside. The isethionate may be sodium cocoyl isethionate. The mixture may additionally contain anionic detergents such as sodium sulphosuccinate, sodium alkyl sulphate or sodium alkyl ether sulphate.

PEARLESCENT SURFACTANT COMPOSITION

The present invention is directed to a surfactant composition and in particular to such a composition which shows a pearlescent effect.

Surfactant compositions having a pearlescent effect have become more common in recent years, for example in hair shampoo. By pearlescent is meant that the materials reflect light in a similar manner to pearls.

It is known to render a composition pearlescent by the addition of a pearlescent agent. Such a material typically is a hydrophobic material which has little, if any, detergent effect. Materials which may be used to provide a pearlescent effect include esters such as glycerol monostearate and diethyleneglycol monostearate. Many pearlescent agents have little, if any, detergent effect and, in view of their water insolubility, are typically used in solution in the detergent. The pearlescent agent can be difficult to formulate and the solution in the detergent may breakdown thereby losing the pearlescent effect. Furthermore the presence of a pearlescent agent may cause a reduction in the foaming achieved by the detergent. Accordingly, it is desirable to provide a mixture having a pearlescent effect which is not liable to the problems which can be associated with the use of known pearlescent agents.

According to the present invention there is provided a surfactant composition which comprises

(A) a glycoside;
(B) an isethionate surfactant; and
(C) water;

the proportions of (A), (B) and (C) being such as to render the composition pearlescent.

Preferably the composition contains sufficient water for the composition to be a flowable mixture. As discussed in more detail hereafter, the amount of water is dependent on the composition of the mixture and the

nature of components (A) and (B). To achieve a flowable mixture, the amount of water present is not less than 35%, and typically is at least 40% by weight of the composition of (A), (B) and (C).

Component (A) of the composition is a glycoside and may be a monoglycoside, a polyglycoside or a mixture thereof. The glycoside is typically a compound which can be represented by the general formula (I):

$$R(OG)_a \qquad (I)$$

where

R is a hydrophobic moiety;

G is a saccharide group; and

a has a value of at least one.

The group R can be hydrocarbyl group, a substituted hydrocarbyl group, a hydrocarbonoxy group or a substituted hydrocarbonoxy group. More specifically, the group R can be an alkyl, cycloalkyl, aryl, alkaryl, aralkyl, alkenyl, alkoxy or aryloxy group and is preferably an alkyl or alkoxy group. The group R conveniently contains from 4 to 30 carbon atoms, preferably from 6 to 24 carbon atoms and especially from 8 to 18 carbon atoms. The glycoside may itself be a composition of glycosides of formula I with different values for the group R, for example different alkyl or alkoxy groups containing different numbers of carbon atoms. Thus, the glycoside can be a composition of glycosides with different alkyl or alkoxy groups, for example a composition of glycosides in which the different R groups contain, on average, 9, 10 or 11 carbon atoms. As an example of such a mixture there may be mentioned a composition in which the R groups are of alkyl or alkoxy groups containing from 8 to 11 carbon atoms and averaging 9 or 10 carbon atoms.

The saccharide group G may be derived from fructose, glucose, mannose, galactose, telose, gulose, allose, altrose, idose, arabinose, xylose, lyxose and ribose or from mixtures thereof. The group G is conveniently derived from glucose units and the glycoside is then a glucoside.

The value of 'a' is the degree of polymerisati n. When 'a' is one the glycoside is a monoglycoside. Typically 'a' has an average value of greater than one and the glycoside is a mixture of polyglycosides, a mixture of a monoglycoside and a polyglycoside, or a mixture of a monoglycoside with a mixture of polyglycosides. The average value of 'a' is typically at least 1.1, particularly at least 1.2 and especially at least 1.3. The average value of 'a' is typically not greater than 8, particularly not greater than 4 and especially not greater than 2.

When the glycoside is an alkyl glucoside, the average value of 'a' is conveniently between 1 and 2, for example from 1.3 to 1.8. We have obtained useful results when the glycoside is an alkyl glucoside of the general formula (II):-

$$C_nH_{(2n+1)}O(C_6H_{10}O_5)_bH \qquad (II)$$

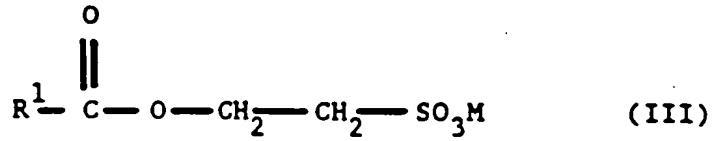
where:

n has an average value of from 8 to 18, especially 9; and

b has a value of greater than one and not more than two.

Hydrocarbyl glycosides are commercially available materials for example as APG 225, APG 300 or APG 325 Glycoside or as Triton BG 10.

Component (B) of the mixture is an isethionate surfactant. The isethionate surfactant is typically a compound which can be represented by the general formula (III):



(III)

where

R^1 is a C_{12} - C_{22} hydrocarbon group, which may be substituted; and

M is a cati n having a valency and being in an amount sufficient to give a neutral compound.

The hydrocarbon group R^1 may be any well known group as used in surfactant technology. It may be a synthetically prepared grouping or may be derived from natural sources, plant or animal, by known techniques. Tallow or vegetable oils are convenient, and these may be at least partially hydrogenated if it is desired to reduce unsaturation. Examples are hydrogenated tallow, lauryl, palm and coco-derived groups.

The cation M is preferably a monovalent cation such as an alkali metal, ammonium or quaternary ammonium cation. Very conveniently the cation is an alkali metal, preferably sodium or potassium. The number of cations required depends upon the valency of the cation provided that the compound is neutral.

Commercially available isethionate surfactants typically contain the free fatty acid $R^1.COOH$ together with an isethionate $HOCH_2CH_2SO_3M$ (for example sodium isethionate), the isethionate surfactant being the major component, typically at least 80% by weight. All references hereafter to "isethionate" are to compounds of general formula (III), unless stated to the contrary.

Depending on the relative proportions by weight of components (A) and (B) and the amount of water (component (C)), the mixture may give a clear or opaque solution or flowable paste, or may give a solution showing a pearlescent effect or may give a thick paste which does not flow readily.

This effect is also dependent on the nature of components (A) and (B), for example, in component (A) on the nature of the group R and the degree of polymerisation, 'a', and in component (B) on the nature of the group R^1 and the cation M.

In a mixture in which component (A) is an alkyl polyglucoside of formula (II) in which the alkyl group is derived from a mixture of C_8 t C_{11} alkyl groups in which 'n' has an average value of 10 and 'b' has an average value of 1.5 and component (B) is sodium cocoyl isethionate, a clear s lution is obtained when the mixture contains less than 2% by weight of component (B), the rest being water and component (A) in varying pr p rtions t gether with minor proportions f fatty acid and unesterified sodium isethionate

present with component (B) (hereafter referred to as "impurities"). If the amount of component (B) is increased to 2.2% by weight, the mixture may be clear, opaque or pearlescent depending on the proportion of component (A). Thus, a mixture containing 2.2% by weight of component (B) and less than about 3.8% by weight of component (A), the rest being water and minor proportions of impurities (less than about 0.5%) is opaque or pearlescent, depending on the particular proportion of component (A). At higher levels of component (A), a clear solution is obtained with a higher proportion of component (B), for example with 40% by weight of component (A) a clear solution is obtained with less than about 9.75% by weight of component (B), the rest of the composition being water, together with impurities. In a similar manner, a transition from a pearlescent solution or an opaque mixture to a thick, non-flowable paste occurs if the amount of component (B) exceeds about 21.25% by weight. The maximum proportion of (A) which does not result in a clear solution is 43.75% by weight, with about 10.6% by weight of (B), the rest being water and impurities. The exact limits for changes in the appearance of the mixtures will be affected to some extent by variations in the nature of the group R, even when this has an average value of 9, and the exact constitution of the cocoyl group.

In the mixture of (A), (B) and (C), the relative proportions by weight of components (A) and (B) to provide a pearlescent effect are dependent on the nature of (A) and (B) and the actual amounts of components (A) and (B). Thus, in a composition which contains about 2.5% by weight of sodium cocoyl isethionate as component (B), pearlescence is obtained when the amount of alkyl polyglucoside (mixed alkyl group having an average of 10 carbon atoms and an average degree of polymerisation of 1.5) used as component (A) is from about 1.2% up to about 3.0% by weight, that is a weight ratio of (A) to (B) of from 0.48:1 up to 1.2:1. However, in a composition which contains about 20% by weight of (B), pearlescence is obtained when the amount of (A) is from about 8.7% up to about 17.5% by weight, that is a weight ratio of (A) to (B) of from 0.435:1 up to 0.88:1. In general, the weight rati of (A) to (B) is in the range from 0.4:1 to 1.5:1. With the specific materials used as components (A) and (B), to obtain a mixture which sh ws a pearlescent effect it is preferred that the weight ratio of (A) to (B) is at least 0.48:1 nd preferably does not exceed 0.875:1 and especially

is in the range f from 0.5:1 up to 0.85:1 for example from 0.55:1 up to 0.60:1. Other compositions containing more than 2% by weight of component (B) and not more than about 10.6% by weight of component (B) may be opaque or clear depending on the proportion of components (A) and (C). Specifically, mixtures containing less than 3.8% by weight of component (A) are opaque whereas at higher levels of component (A), a clear or opaque mixture may be obtained. When the proportion of component (B) exceeds about 21.25% by weight, the mixture becomes a thick non-flowable paste.

As is discussed in more detail hereafter, the proportions of (A), (B), and (C) required to give opaque, pearlescent or clear mixtures or a non-flowable paste, can be readily determined by simple mixing experiments. Thus, mixtures containing (A) and (B) in various relative proportions can be prepared and these mixtures can be diluted by the addition of increasing amounts of water, the composition being recorded when a change in the appearance of the mixture is observed.

In addition to components (A), (B) and (C), the composition of the present invention may include other components in addition to materials present as impurities in components (A) or (B). These other components may be other surface active materials, particularly detergents. We have obtained useful effects when components (A), (B), and (C) are mixed with anionic detergents, other than those which are component (B). The anionic detergent may be a sodium sulphosuccinate, a sodium alkyl sulphate or a sodium alkyl ether sulphate. The alkyl groups in the anionic detergents typically contain at least six carbon atoms and especially at least eight carbon atoms, and in general contain not more than 24 carbon atoms, especially not more than 18 carbon atoms. The alkyl groups may be a mixture of isomeric alkyl groups or a mixture of alkyl groups containing different numbers of carbon atoms or a mixture of both of these, for example a mixture of alkyl groups containing predominantly from 10 to 15 carbon atoms. Suitable sodium alkyl ether sulphates preferably contain 1 to 10 ethyleneoxy groups, f r example 2 to 4 ethyleneoxy groups and such materials may be a mixture in which the number of ethyleneoxy groups vary.

Compositions in accordance with the present invention which also contain an anionic detergent will still show a pearlescent effect, depending

on the nature of the anionic detergent and the relative proportions of the components. Such compositions may be prepared by pre-mixing components (A), (B) and (C) in the appropriate proportions to give a pearlescent effect and then adding the anionic detergent to this mixture. The production of a pearlescent effect is dependent on the relative proportions of the anionic detergent to the mixture [(A)+(B)] and also on the actual concentration of the components.

In a mixture containing an alkyl polyglucoside (alkyl group containing an average of ten carbon atoms, average degree of polymerisation of 1.5), sodium cocoyl isethionate, water and a sodium sulphosuccinate (a compound of the formula $CH_2(COOR^2)CH(COONa)SO_3Na$ in which R^2 is of the type $(C_2H_4O)_mR^3$ in which 'm' has an average value of three and R^3 is a mixture of alkyl groups containing from 9 to 15 carbon atoms with at least 80% by weight of the alkyl groups containing 13 or 15 carbon atoms) and using the glucoside and isethionate in the weight ratio of about 0.59:1, no pearlescent effect is observed, in the presence of the sulphosuccinate, when the concentration of the mixture of glucoside plus isethionate is less than about 3.3% by weight or greater than about 34% by weight. Furthermore, if the concentration of the sulphosuccinate is greater than 14% by weight, no pearlescent effect is observed. Within these limits, a pearlescent effect can be obtained.

In a mixture containing the same alkyl polyglucoside, sodium cocoyl isethionate, water and sodium alkyl sulphate (a compound in which the alkyl group is a mixture of alkyl groups containing from 12 to 16 carbon atoms) with the weight ratio of glucoside to isethionate being 0.59:1, no pearlescent effect is noted, in the presence of the alkyl sulphate, when the concentration of the mixture of glucoside plus isethionate is less than about 3.3% by weight or greater than about 34% by weight. If the concentration of the alkyl sulphate is greater than about 27% by weight no pearlescent effect is observed. The minimum concentration of the mixture of glucoside plus isethionate which is required to give a pearlescent effect is dependent on the concentration of the alkyl sulphate, more of the mixture being required at a higher concentration of alkyl sulphate. The maximum concentration of the mixture, above which a pearlescent effect is no longer obtained, also depends on the concentration of the alkyl sulphate, less of the mixture being

required at a higher concentration of alkyl sulphate. Subject to the foregoing and within the specified limits, a pearlescent effect can be obtained.

In a mixture containing the same alkyl polyglucoside, sodium cocoyl isethionate, water and sodium alkyl ether sulphate (a compound of the formula $R^4(C_2H_4O)_pSO_3Na$ in which R^4 is a mixture of alkyl groups containing 13 to 15 carbon atoms and 'p' has an average value of at least two and not more than three) with a weight ratio of glucoside to isethionate of 0.59:1, no pearlescent effect is noted, in the presence of the ether sulphate, when the concentration of the mixture of glucoside plus isethionate is less than about 3.3% by weight or more than about 34% by weight. If the concentration of the ether sulphate is greater than about 14% by weight, no pearlescent effect is noted. The minimum level of the mixture required to obtain a pearlescent effect is very much dependent on the concentration of the ether sulphate, and more of the mixture is required to obtain a pearlescent effect at higher concentration of ether sulphate, for example at an ether sulphate concentration of about 12% by weight, the minimum concentration of the mixture required to obtain a pearlescent effect is about 15.7% by weight. Subject to the foregoing, and within the specified limits, a pearlescent effect can be obtained.

The proportions needed to achieve a desired effect, for example a pearlescent effect, can be determined by experiment.

The compositions may additionally include other components which are conventionally present in surfactant compositions, for example colouring materials, perfumes and the like.

The compositions are effective as surfactants and may be used in any systems in which surfactants are used. The compositions are particularly suitable for use in liquid soaps, and bath and shower products such as hair shampoos.

We have found that in compositions in accordance with the present invention which show a pearlescent effect, this effect disappears at elevated temperatures and in general at a temperature of 32 to 34°C, above which

temperature the composition becomes slightly turbid r may become totally clear. On co ling the mixture below about 30°C, the pearlescence reappears.

We have found that the glycoside when used with other surface active materials, for example sulphosuccinates, alkyl sulphates, alkyl ether sulphates, in the presence of water does not give a pearlescent effect. Hence, the appearance of a pearlescent effect is dependent on the use of a mixture of components (A), (B) and (C) as defined herein.

Various aspects of the present invention are illustrated in the following non-limiting examples and the accompanying drawings wherein:-

Figure 1 represents graphically the variations in the visible appearance of a mixture containing a glycoside and an isethionate, in the presence of water to 100% by weight;

Figure 2 represents graphically the region of pearlescence in a mixture of glycoside, isethionate, and a sulphosuccinate, in the presence of water to 100% by weight;

Figure 3 represents graphically the region of pearlescence in a mixture of glycoside, isethionate, and an alkyl sulphate, in the presence of water to 100% by weight; and

Figure 4 represents graphically the region of pearlescence in a mixture of glycoside, isethionate and an alkyl ether sulphate in the presence of water to 100% by weight.

Preferred compositions in accordance with the present invention are those showing pearlescence. In Figure 1 of the accompanying drawings, the composition defined by the region BCGH shows a pearlescent effect. The composition defined by the region ABHI is a white and creamy composition, and the composition defined by the region CDEFG is a brown and pasty paque comp sition. T the left of the lines AD and DE, clear soluti ns are

obtained and to the right of the line FI an almost solid paste is obtained. In Figure 2, using a 0.59:1 by weight mixture of alkyl polyglucoside to isethionate, a pearlescent effect is obtained by the addition of a sodium sulphosuccinate to give a composition in the region JKLM. In Figure 3, the same alkyl polyglucoside-isethionate mixture as in Figure 2 gives a pearlescent effect when sodium alkyl sulphate is added to give a composition in the region NOPQ. In Figure 4, the same alkyl polyglucoside-isethionate mixture as in Figure 2 gives a pearlescent effect when sodium alkyl ether sulphate is added to give a composition in the region RSTUV.

In Figure 1, the axis SCI indicates the percentage by weight of sodium cocoyl isethionate present in the composition and similarly APG indicates the percentage by weight of alkyl polyglucoside present in the mixture, the residual quantities to 100% by weight being water and impurities associated with the sodium cocoyl isethionate, which impurities are present in an amount of 15/85 (about 17.6%) by weight of the sodium cocoyl isethionate.

In Figures 2 to 4, the axis (APG + SCI) indicates the percentage by weight of a mixture of APG (25% by weight), SCI (42.5% by weight), impurities (7.5% by weight) and water (25% by weight). In Figure 2, the axis NSS indicates the percentage by weight of sodium sulphosuccinate. In Figure 3, the axis NAS indicates the percentage by weight of sodium alkyl sulphate. In Figure 4, the axis NAES indicates the percentage by weight of sodium alkyl ether sulphate. In all of Figures 2 to 4, the residual quantities, to 100% by weight, are water.

EXAMPLE 1

Mixture of glycoside, isethionate and water

In initial experiments it was found that sodium cocoyl isethi nate [a commercial product containing 85% by weight of sodium cocoyl isethionate, the remainder being about equal proportions by weight of fatty acid (c c acids) and sodium isethionate ($NaSO_3CH_2CH_2OH$)] gives a clear aqueous s lution at a sodium cocoyl isethionate pr portion of less than about 2.1% by weight

(Point A in Figure 1). At higher levels of sodium cocoyl isethionate, an opaque aqueous mixture is obtained, the viscosity of which increases with increasing sodium cocoyl isethionate concentration. At a sodium cocoyl isethionate concentration of more than about 21.25% by weight, an almost solid paste is obtained (Point I in Figure 1).

Sodium cocoyl isethionate, as described previously herein, was added to a 50% by weight aqueous solution of an alkyl polyglucoside (a mixture of alkyl groups containing 8 to 11 carbon atoms with an average of ten carbon atoms with an average degree of polymerisation of 1.5) to determine the maximum solubility of sodium cocoyl isethionate in this mixture to give a clear solution. At a sodium cocoyl isethionate concentration of about 10.6% by weight, the remainder being the polyglucoside (43.75% by weight) impurities in the sodium cocoyl isethionate (1.9% by weight) and water (rest), the mixture was no longer a clear solution but became an opaque mixture (Point E in Figure 1). The point F in Figure 1 represents the transition from an opaque mixture to an almost solid paste (21.25% by weight of sodium cocoyl isethionate, about 3.75% by weight of impurities in the sodium cocoyl isethionate, 37.5% by weight of each of alkyl polyglucoside and water). To determine further points, water is added to progressively t the composition at point F giving an opaque brown and pasty composition which becomes less thick as more water is added till a clear solution is obtained at point D (concentrations of sodium cocoyl isethionate, impurities and alkyl polyglucoside all one tenth of concentrations at point F, rest water). Mixtures were prepared containing higher proportions of the sodium cocoyl isethionate relative to the alkyl polyglucoside and water was added to each of these mixtures, noting the compositions at which a change in the appearance of the mixture was observed. In this manner the compositions giving a pearlescent effect were determined and are defined by the points B, C, G & H. The compositions above the line CG are brown and pasty opaque compositions and the compositions below the line BH are white and creamy compositions.

EXAMPLE 2

The sodium cocoyl isethionate and the alkyl polyglucoside soluti n as used in Example 1 were mixed in the relative proportions by weight of alkyl polyglucoside to sodium cocoyl isethionate of 50:85, that is about 0.59:1 by weight.

The mixture of sodium cocoyl isethionate and alkyl polyglucoside as described herein was mixed with various proportions of a 35% by weight aqueous solution of sodium sulphosuccinate (a compound of the formula $CH_2(COOR^2)CH(COONa)SO_3Na$ in which R^2 is of the type $(C_2H_4O)_mR^3$ in which m has an average value of three and R^3 is a mixture of alkyl groups containing from 9 to 15 carbon atoms with at least 80% by weight of the alkyl groups containing 13 or 15 carbon atoms) and the changes in the appearance of the mixture were noted as water was added. The area JKLM defines the compositions giving a pearlescent effect. Compositions beyond the line JK give clear solutions and those beyond the line KL are opaque solutions. Beyond the line LM, the compositions are a solid paste.

EXAMPLE 3

The procedure of Example 2 was repeated using a 30% by weight aqueous solution of a sodium alkyl sulphate in which the alkyl group is a mixture of alkyl groups cotanining from 12 to 16 carbon atoms. The area NOPQ defines the compositions giving a pearlescent effect. Compositions beyond the line OP give opaque solutions, those beyond the line PQ are a solid paste and those beyond the line NO are clear solutions.

EXAMPLE 4

The procedure of Example 2 was repeated using a 20% by weight aqueous solution of a sodium alkyl ether sulphate (a compound f the formula $R^4(C_2H_4O)_pSO_3Na$ in which R^4 is a mixture of alkyl groups containing 13 to 15 carbon atoms and p has an average value f at least two and not more than

three) in place of the sulphosuccinate used in Example 2. The area RSTUV defines the compositions giving a pearlescent effect. Compositions beyond the lines RS and ST give clear solutions. Compositions beyond the line TU give opaque solutions and those beyond the line UV give a solid paste.

CLAIMS

1. A surfactant composition which ~~comprises~~ includes

(A) a glycoside;

(B) an isethionate surfactant; and

(C) water;

the proportions of (A), (B) and (C) being such as to render the composition pearlescent.

2. A composition as claimed in claim 1 wherein the glycoside is a compound of the general formula (I):-

$$R(OG)_a \qquad (I)$$

where

R is a hydrocarbyl group, a substituted hydrocarbyl group, a hydrocarbonoxy group or a substituted hydrocarbonoxy group.

G is a saccharide group; and

a has a value of at least one.

3. A composition as claimed in claim 2 wherein R is an alkyl or alkoxy group containing from 4 to 30 carbon atoms.

4. A composition as claimed in either claim 2 or claim 3 wherein G is derived from glucose units and 'a' is between 1 and 2.

5. A composition as claimed in claim 1 wherein the glycoside is an alkyl glucoside of the general formula (II)

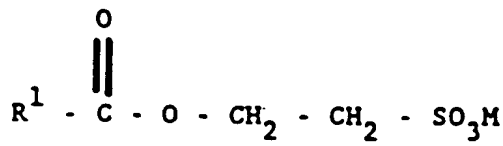
$$C_nH_{(2n+1)}O(C_6H_{10}O_5)_bH \qquad (II)$$

where

n has an average value f from 8 to 18; and

b has a value of greater than one and not m re than two.

6. A composition as claimed in any one of claims 1 to 4 wherein the isethionate surfactant is of the general formula:



(III)

where

R^1 is a C_{12}-C_{22} hydrocarbon group, which may be substituted; and

M is a cation having a valency and being in an amount sufficient to give a neutral composition.

7. A composition as claimed in claim 6 wherein R^1 is a hydrogenated tallow-, lauryl-, palm- or coco- derived group.

8. A composition as claimed in any one of claims 1 to 7 which contains from 2% up to 21.25% by weight of component (B).

9. A composition as claimed in any one of claims 1 to 8 which contains up to 43.75% by weight of component (A).

10. A composition as claimed in any one of claims 1 to 9 wherein th weight ratio of (A) to (B) is in the range from 0.4:1 to 1.5:1.

11. A composition as claimed in any one of claims 1 to 10 which contains from 2.5 to 20% by weight of (B) and the weight ratio of (A) to (B) is at least 0.48:1 and does not exceed 0.875:1.

12. A composition as claimed in any one of claims 1 to 11 which includes anionic detergents which are other than those which are component (B).

13. Liquid soap, a bath or shower pr duct containing a c mp sition as claimed in any one of claims 1 to 12.

14. Hair shampoo containing a composition as claimed in any one of claims 1 to 12.

15. A composition as claimed in claim 1 substantially as hereinbefore described with reference to any one of the examples or drawings.

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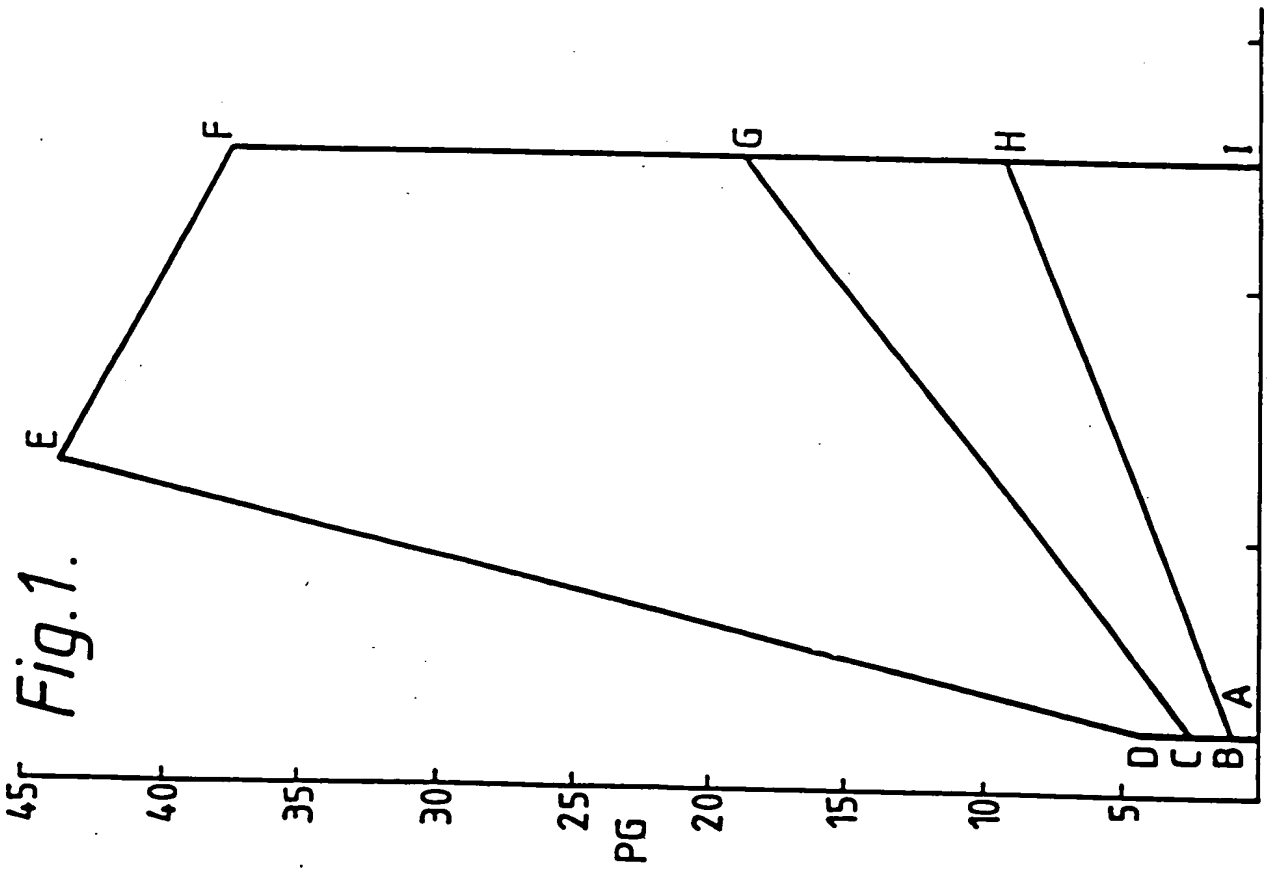
DEUTSCHE ICI GMBH

David B Fitzpatrick

Fig. 1.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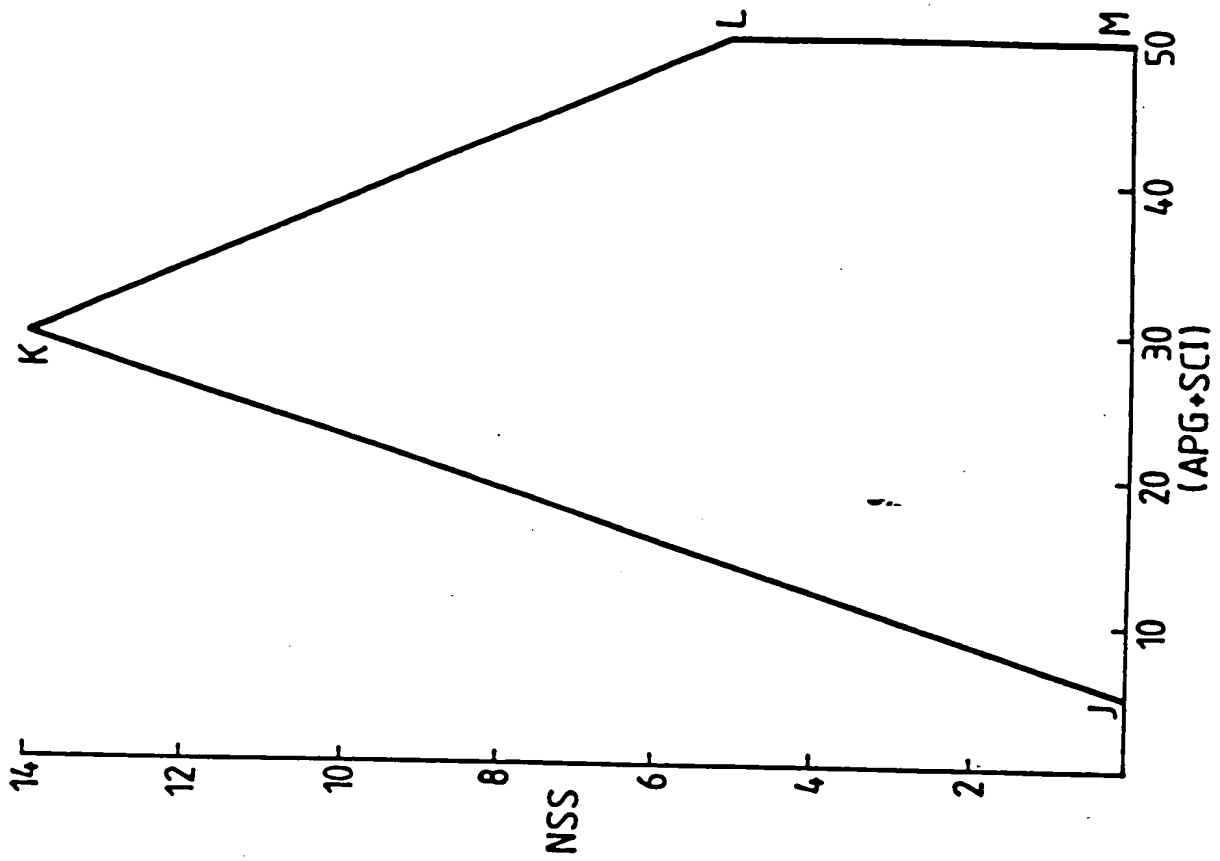
PG
E
F
G
H
I
D
C
B
A
8·5
17·0
25·5
SCI

Fig. 2.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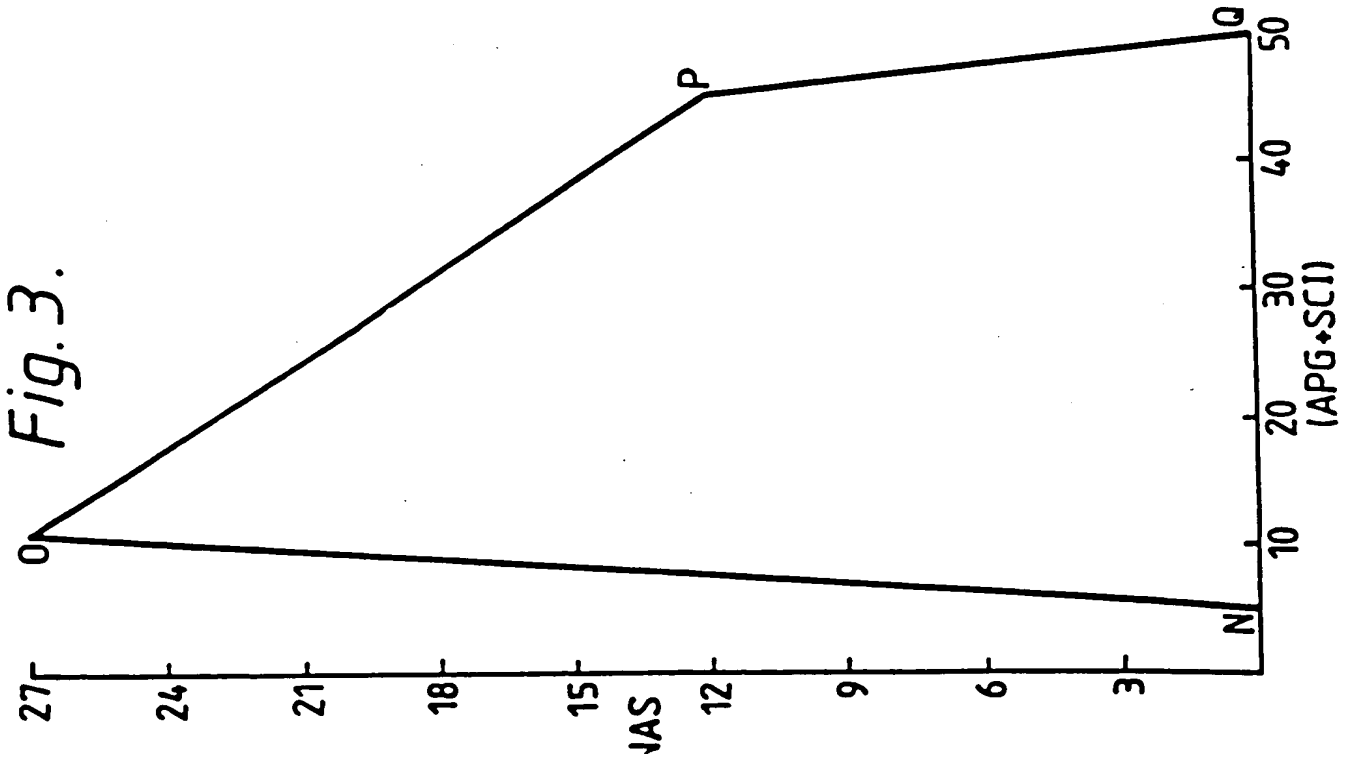
(APG+SCI)

Fig. 3.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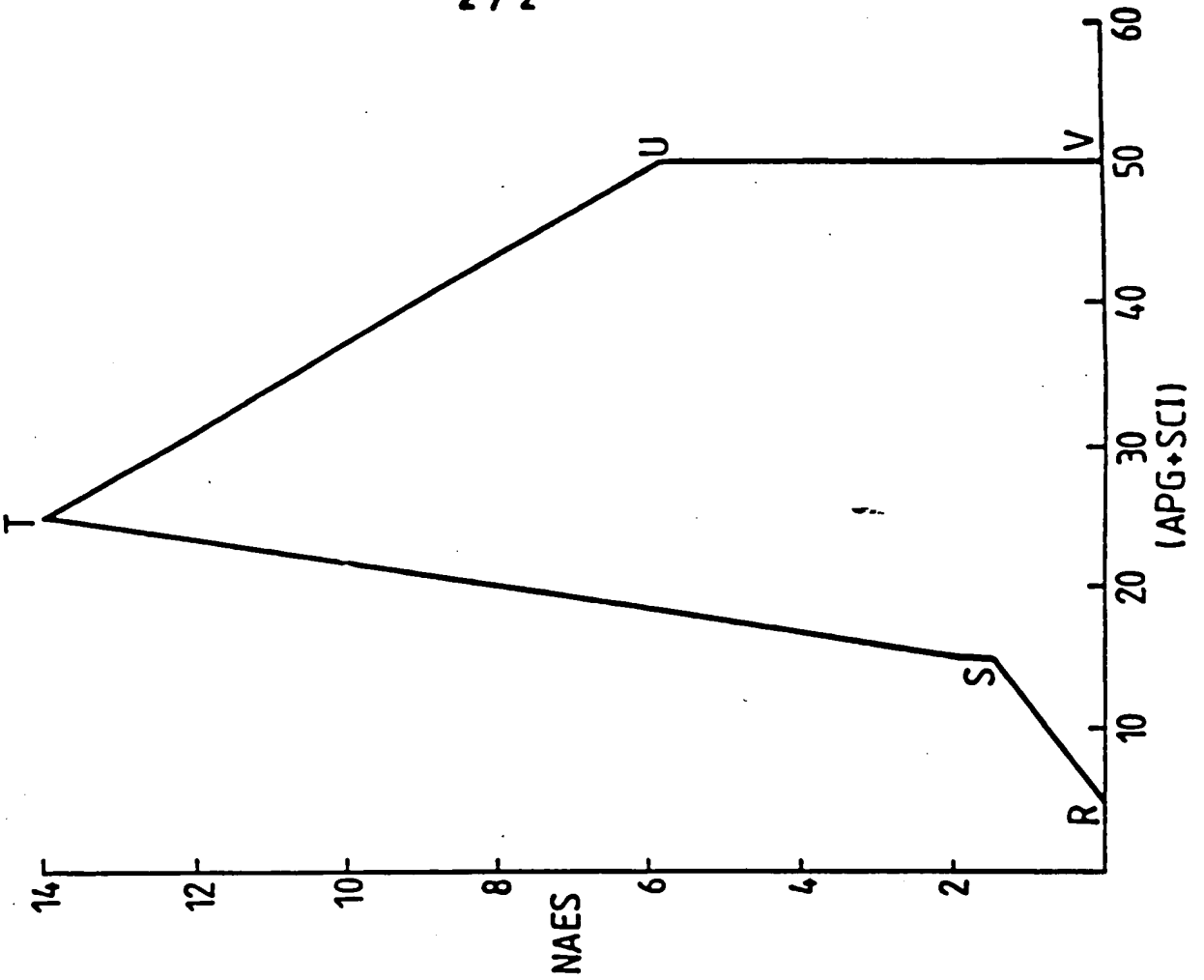
(APG+SCI)

Fig. 4.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(APG+SCI)

International Application No PCT/GB 92/00094

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl. 5 C11D1/83; A61K7/50; A61K7/08

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
Int.Cl. 5	C11D ; A61K

Documentation Searched other than Minimum Documentation to the Extent that such Documents are included in the Fields Searched[8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category *	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No.[13]
A	EP,A,0 453 238 (UNILEVER) 23 October 1991 see claims 1-3,8	1-14
A	EP,A,0 409 005 (KAO CORP.) 23 January 1991 see page 3, line 40 - line 48; examples	1-5,2-14
A	WO,A,9 013 283 (UNILEVER) 15 November 1990 see page 4, line 15 - line 23 see page 10, line 6 - line 35; claims 1,3,8,11; example 1	1,2,4, 6-9, 12-14
A	EP,A,0 207 642 (DEUTSCHE ICI) 7 January 1987 see claims	1,6-8, 12-14

-/--

* Special categories of cited documents :[10]

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
25 SEPTEMBER 1992	2. 10. 92
International Searching Authority	**Signature of Authorized Officer**
EUR PEAN PATENT OFFICE	GRITTERN A.G.

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III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
A	DATABASE WPIL Section Ch, Derwent Publications Ltd., London, GB; Class D21, & JP,A,1 043 599 (GIYUUNIYUU SETSUKEN KIYOUSHINSHIYA) 15 February 1989 see abstract	1

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. GB 9200094 SA 55911

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 25/09/92
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Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP-A-0453238	23-10-91	AU-A-	7505491	24-10-91
EP-A-0409005	23-01-91	JP-A-	3052807	07-03-91
WO-A-9013283	15-11-90	US-A-	5132037	21-07-92
		CA-A-	2015868	05-11-90
		EP-A-	0479795	15-04-92
EP-A-0207642	07-01-87	None		